

WE CLAIM:

1. A large profile, high speed laser micrometer,
comprising:

- 5 (a) a light source unit comprised of an emitter
module that emits a laser sheet;
- (b) a detector array comprised of a detector module,
wherein said emitter module and said detector
module are aligned; and
- 10 (c) a data processing unit;

such that an object passing between said light source unit
and said detector array can be measured to an accuracy of
at least 4/100ths of an inch.

- 15 2. The laser micrometer according to claim 1, wherein
said emitter module is comprised of one or more laser line
generators, said laser line generators arranged in an
overlapping fashion to prevent gaps in the laser sheet
emitted by said emitter module when the number of said
20 laser line generators is two or more.

3. The laser micrometer according to claim 2, wherein
said laser line generators are arranged in an overlapping
stair-step fashion.

4. The laser micrometer according to claim 2, wherein
said detector module is comprised of one or more linear CIS
detectors, the number of said linear CIS detectors equal to
the number of laser line generators, said linear CIS
5 detectors arranged in an overlapping fashion corresponding
to said laser line generators.

5. A large profile, high speed laser micrometer,
comprising:

- 10 (a) a light source unit comprised of a plurality of
emitter modules that combine to emit a laser
sheet;
- (b) a detector array comprised of a plurality of
detector modules wherein each of said plurality
15 of emitter modules and each of said plurality of
detector modules are aligned; and
- (c) one or more data processing units;

such that an object passing between said light source unit
and said detector array can be measured to an accuracy of
20 at least 4/100ths of an inch.

6. The laser micrometer according to claim 5, wherein
each of said emitter modules is comprised of two or more
laser line generators, said laser line generators arranged

in an overlapping fashion to prevent gaps in the laser sheet emitted by said emitter module;

7. The laser micrometer according to claim 6, wherein
5 said laser line generators are arranged in an overlapping stair-step fashion

8. The laser micrometer according to claim 6, wherein
each of said detector modules is comprised of two or more
10 linear CIS detectors, the number of said linear CIS detectors equal to the number of laser line generators, said linear CIS detectors arranged in an overlapping stair-step fashion corresponding to said laser line generators.

15 9. The laser micrometer according to claim 5, wherein the number of data processing units is equal to a fraction of the number of said detector modules such that each data processing unit provides data processing for a number of detector modules located adjacent to one another.

20 10. The laser micrometer according to claim 9, where said fraction is one-third.

11. An apparatus for emitting a linear, planar sheet of
25 light, comprising:

- (a) a laser which emits a beam of light;
 - (b) an aspherical lens which converts said beam of light into a fan-shaped sheet of light; and
 - (c) a parabolic mirror which reflects said fan-shaped
- 5 sheet of light into a linear, planar sheet of light,

12. The apparatus according to claim 11, further

comprising a flat mirror located between said aspherical

10 lens and said parabolic mirror which reflects said fan-shaped sheet of light from said aspherical lens into said parabolic mirror.